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ABSTRACT

A coding scheme developed by M. A. K. Halliday and R. Hasan was used in a study that investigated how students in grades 4, 6, and 8 developed meaning within narrative texts. Students, after being presented with a visual stimulus, were asked to describe what was happening and say what happened before and after the picture. Next, an oral assignment closely paralleled the written, with a picture as a stimulus and information concerning role, audience, and setting. Each communication unit in the texts was coded to determine instances of the number of ties per communication unit, cohesive items within the text, type of cohesive tie, distance between cohesive items and the direction of the tie, and presupposed items. Among the findings were the following: (1) at all grade levels, lexical cohesion occurred more frequently in the written narratives than in the oral; (2) for narratives written in grades 4 and 6, lexical cohesion accounted for over 50% of the total number of ties produced; (3) students in grades 4 and 6 used a higher percentage of reference ties in their oral than in their written narratives while students in grade 8 reversed this trend; (4) the percentage of conjunctive ties remained relatively stable throughout the three grades except for a sharp decline in their use in the grade 8 written samples; (5) both substitution and ellipsis occurred infrequently; and (6) the narratives with the highest number of ties per communication unit were produced by eighth graders, while those with the lowest number of ties per communication unit were produced by fourth graders. (HOD)

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Cohesion in Student Narratives: Grades Four, Six, and Eight

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CS208 398

Cohesion in Student Narratives: Grades Four, Six, and Eight

Researchers have employed several strategies in order to study the development of narrative discourse, emphasizing different variables and theoretical orientations. Some researchers have concentrated on understanding the elements of the text, others on understanding the process of composing, and still others on defining the abstract framework that language users establish for comprehending and creating stories. For example, text investigations of structural complexity have looked at the syntactic structures within segmented units of discourse (Hunt, 1965; Loban, 1976; O'Donnell, Griffin & Norris, 1967). These studies have yielded reliable indices of language development based upon the length of syntactic units. Other researchers have concentrated on the process by which writers create discourse. Graves (1980), for instance, has reported classroom-based observations of young writers who are learning discourse conventions. Such research attempts to show how good writing is produced. Several researchers have attempted to describe the language user's abstract understanding, or schema, for interpreting stories. Stein and Glenn (1979) found several developmental differences in children's understanding of stories. On the basis of their observations, they predicted that children's spontaneous stories would conform to their underlying story concepts. Although these research orientations are identifiable, they can all be regarded as complementary endeavors to understand the development of mature discourse.

The present study is an example of text-level analysis. It differs from traditional linguistic analyses in several ways. First, it deals with units of language that are typically larger than the sentence; these

units might be conversations, reports, summaries--or in this case, narratives. Secondly, text-level analysis is concerned with language as it is utilized by people in social contexts. There is an underlying assumption that the situation in which language is produced greatly influences the character of that language. Third, text-level analysis differs in kind from sentence-level analysis. The meanings derived from a text are more than the sum of each individual sentence. This research deals with this larger aspect of text meaning.

Halliday and Hasan (1976) in their book Cohesion in English have provided an elaborate description of the semantic relationships that bind texts. These relationships, which occur when the interpretation of one part of the text depends on the information from another part, are called cohesive ties. Each tie involves two items--one "presupposed" and one "presupposing." Their relation provides for continuity within a text.

There are five kinds of cohesive ties: reference, substitution, ellipsis, conjunction, and lexical cohesion. Reference is a semantic relation involving continuity of identity; an item that has been introduced into the text is once again referred to by means of personal pronouns, demonstratives, or comparative adverbs and adjectives. Substitution and ellipsis are both ties based on wording, but not identity of meaning. In fact, some kind of repudiation is involved. In the case of substitution a word such as do or one replaces a word that has already been mentioned. However, with ellipsis there is no replacement. The structural element has been left out and must be recovered from a different part of the text. Conjunctive ties show the relation of one part of the text to another. For example, conjunctive ties based on temporal order establish the sequence within text. Lexical ties are based on vocabulary used either as a form

of reiteration or collocation. Lexical cohesion occurs when a synonym for a previously stated word is used or when there is some type of semantic relation between words.

A coding scheme developed by Halliday and Hasan can be used to classify each tie within text, describe its location, and record the distance between the two elements that comprise a tie. The significance of this coding scheme is that it enables an investigator to describe the types of semantic relations within a text and to compare the texture of different texts. Texts can be compared not only in terms of semantic strategies, but also in terms of the density of ties and the distance relations between cohesive elements. This type of analysis was employed in the present study in order to investigate how unified meaning was achieved in selected narrative texts.

Related Studies

Several studies have used cohesion analysis to investigate oral and written language. These studies have indicated that there is some evidence that the types of cohesive ties found within texts are related to the following factors: age, amount of information to be conveyed, quality of writing, and comprehensibility.

Cohesion is one of several factors that has been included in studies of how children develop writing skills (Rentel, King & Pappas, 1979; Rentel, King, Pappas & Pettegrew, 1979). Among the findings of these studies is that first grade students rely heavily on reference, conjunction, and lexical cohesion in the form of reiteration in both their oral and written narratives. They make frequent use of conjunctive ties until they learn more appropriate and precise means to join text. Rentel, King, and Pappas also found that children who represented story structure more completely--either in terms of Proppian functions or Rumelhart's story grammar--used a greater variety of cohesive ties. These studies suggest that cohesion

is related to both linguistic maturity and knowledge of discourse structure.

A few studies have used cohesion analysis to show how information is handled in student writing. Champagne, Scardamalia, Bereither, and Fine (1980) studied how developing writers in grades three, six, and nine revise protocols after receiving additional information. While Champagne et al. concluded that children have considerable difficulty revising, it was the cohesion analysis that revealed why the revised texts were not successful. Two other studies also used cohesion analysis to explain the lack of integration often found in student writing. Jacobs (1980) described the "chunking" strategy of students who were unable to deal with heavy informational demands while maintaining appropriate textual cohesion. Eiler (1979) likewise found that when ninth grade students were asked to write expository essays about selected pieces of literature, they often used a collection of expository statements without supporting evidence. In each of these studies the analysis of semantic relations explained how a text developed meaning, or failed to do so.

Researchers have found that various measures of textual cohesion are related to holistic ratings of compositions. Witte (1980) analyzed essays written by good and poor college writers as determined by holistic scoring. Good writers exceeded poor writers on the following measures: mean number of cohesive ties, cohesive density, and number of types of conjunctive ties per text span of 100 T-Units. These findings were supported by Hartnett (1980) who determined that holistic scores were positively correlated with the number of kinds of ties used by student writers in a basic writing class.

Text-level studies of cohesion have implications for reading instruction and research. Investigators have recognized that the organization of a text

above the sentence level does influence its comprehensibility (Moe, 1978, 1979; Starling, 1979; Stone, 1979). Stone found that university students took longer to process sentences preceded by indirect inference entailed verbs than direct inference entailed verbs. He concluded that readers carry information across sentence boundaries and that the linguistic structure of a text can influence its comprehensibility. Starling has called attention to the fact that most readability formulas are based on measures of gramatical complexity within sentences. She suggests that a measure of cohesion be included within readability formulas. Garber (1979) coded child produced texts and beginning reading materials for cohesive ties. She found significant differences between the two kinds of samples in the number and types of ties. It appears that in simplifying reading texts for children, writers also risk eliminating the semantic ties that children both use and understand.

While previous studies have demonstrated the vast descriptive power of cohesion analysis, there is a need to systematically determine which text-forming strategies children learn relatively early and which strategies they learn relatively late. This information is needed in order to prepare appropriate educational programs.

Purpose

This study was designed to investigate how students in grades four, six, and eight develop meaning within narrative texts. Only the overt or explicit text relations occurring between communication units were investigated. These semantic relationships were studied in order to learn more about the development of meaning in extended discourse.

The questions that were investigated in this study were the following:

1. What types of cohesive ties are present in oral and written

narratives produced by selected fourth, sixth, and eighth grade students?

2. What is the density of cohesive ties in the oral and written narratives of these selected students?
3. What types of textual distances separate the elements that constitute cohesive ties within the oral and written narratives?
4. What patterns of cohesion dominate the narrative texts of selected fourth, sixth, and eighth grade students?
5. Do the narratives differ from each other because of grade level, sex, or channel of communication, in the presence of cohesive ties? Is there any effect on the presence of cohesive ties due to the interaction of these variables?

Method

Subjects

The students who participated in this study attended two different public schools in a middle class residential area of New York City during the 1980-1981 academic year. Pupils in grades four and six attended an elementary school, while pupils in grade eight attended a junior high school. Both schools have achieved high academic ratings. During the previous academic year, the elementary school ranked eighth in the city and first in the district in reading achievement as measured by the California Achievement Test, while the junior high school ranked first among New York City junior high schools in overall reading achievement.

The researcher asked classroom teachers to select students they thought of a having "average" to "above average" ability to express themselves in writing and speaking. The reason for so limiting the population was to gather samples that would include a wide range of text

forming options. The three grade levels--four, six, and eight--were specifically chosen in order to determine if there were indications of developmental trends in text production. Two boys and two girls were chosen at each grade level.

Materials

The Writing Assignment. The writing assignment was designed to stimulate students to produce written narratives. It is similar to the writing exercise "Children on Boat" prepared for the National Assessment of Educational Progress. According to Lloyd-Jones (1977), this exercise was designed for use with Primary Trait scoring procedures and uses a picture as a stimulus. The writer is asked to "tell what is going on" (p. 48). While the primary trait being scored is imaginative expression of feeling through elaboration of point of view, the original scoring guide includes consideration of temporal point of view, transitions, and consistent narrative, while the final scoring guide has an entire category for tense. Each of these elements contributes to global narrative structure.

The NAEP exercise defines the situational features that shape text: field, tenor, and mode. The field of discourse is largely determined by the information in the picture, since it is the writer's job to add detail that is consistent with what is given. In addition, the writer is directed to pay attention to the role relations, or tenor; he is told to direct his observations to "a good friend" while assuming the role of observer or participant. Finally, by instructing the student to "write as if you were telling this to a good friend," the exercise helps determine the mode--narrative structure using the written channel.

Situational information was likewise provided for the students who participated in the present study. The pictorial stimuli for writing showed

three youngsters bicycling along a paved road surrounded by flowers and greenery. Writers were given the following directions which included information on tenor and mode:

> I am interested in learning about how children your age write. Your teacher has selected you to help me. This morning I am going to ask you to write a composition. You will have as much time as you need to write, so you can spend some time thinking. If you have a question about spelling, you can use the dictionary, ask me, or do the best you can.
>
> Now, look at this picture carefully. Pretend that you are the person in the picture or that you are watching him. Describe what is happening, and maybe what happened before and after the picture. Imagine that you are writing for a teacher, but one who cannot see the picture.

The Oral Assignment. The oral assignment closely paralled the written in that it used a picture as a stimulus and provided information concerning role (participant or observer of the activity shown in the picture), audience (teacher), and setting (forest). The picture used showed three young girls in Brownie uniforms in front of a large tree in a forest, gazing in the direction being pointed to by one of the girls.

Procedures

Collection of Texts. Each text was collected by the researcher in a school setting. The writing assignment was given to students in one grade level at a time. The researcher read the directions and clarified the assignment as necessary.

The oral assignment was given to each student individually by the researcher within two weeks of the written assignment. Students were

allowed as much time as they needed in order to plan their stories before telling them.

Typewritten copies were made of each oral and written text. Written texts were typed using the student's punctuation and spelling; oral texts were typed without punctuation. Garbles, or mazes, were deleted from the oral samples to facilitate segmentation into standardized units.

Analysis of Data. In order to study and compare the language samples, each typewritten text was segmented into communication units (Loban, 1976). Essentially a communication unit is similar to a T-unit except that the classification is expanded to include elliptical responses to questions that can be filled in using the preceding text. One text sample from each grade level was segmented by an additional rater who was trained by the researcher. The percentage of agreement between raters was 98% as determined by the ratio of units identified by both raters compared with the total number of unique items identified.

To determine the types of cohesive ties present in the student narratives, each communication within the texts was coded using Halliday and Hasan's (1976) coding scheme to determine instances of the following factors: (1) number of ties per communication unit, (2) cohesive item within the text, (3) type of cohesive tie, (4) distance between cohesive items and the direction of the tie, (5) presupposed item.

Two oral and one written text were coded by the researcher and an additional rater trained to do cohesion analysis. The percentage of agreement was 95% as determined by calculating the ratio of cohesive items identified by both raters compared with the total number of cohesive items identified.

After the coding, the following descriptive data was collected for

each narrative: (1) percentage of reference ties, (2) percentage of substitution-ellipsis ties, (3) percentage of conjunctive ties, and (4) percentage of lexical ties.

To examine the density of cohesive ties within the narratives, the following data was collected for each text: (1) total number of communication units, (2) total number of ties, (3) total number of words. Using these measures, the following scores were computed: (1) cohesive density (number of words/number of ties) and (2) average number of ties per communication unit.

The types of textual distances separating the elements forming cohesive ties were investigated. Descriptive data concerning the percentage of occurrence of each of the following distance relations within the individual narratives was collected: (1) immediate ties (ties resolved in adjoining communication units), (2) remote ties (intervening communication unit(s) occur which have no relation to the cohesive tie), (3) mediated ties (intervening communication unit(s) occur which contain material relating to the tie but not resolving it), and mediated-remote ties (intervening communication units occur which contain both mediated and remote material).

From the results obtained, various "maps" were drawn to illustrate dominant cohesive patterns found in the texts. Statements based on these maps provided a description of the patterns of cohesion which dominated the narrative texts. The mapping technique was adapted from Gutwinski (1976).

Four analyses of variance with repeated measures were conducted to determine the effects associated with grade level, sex, and channel of communication on the occurrence of each type of cohesive tie. The independent variables for each analysis were channel, sex, grade, and

student nested within sex and grade. The dependent variables, which were analyzed separately, were (1) reference ties, (2) substitution and elliptical ties, (3) conjunctive ties, and (4) lexical ties. The percentages of substitution and elliptical ties were combined, since they were considered as manifestations of the same phenomenon. Null hypotheses for the effects of each independent variable were postulated at the .05 level of significance. The error terms CR/SG and R/SG were pooled when a preliminary F test of the terms was non-significant at the .25 level of confidence. When statistically significant grade level effects were found, a Newman-Keuls test was used to determine which means differed significantly.

Findings

Types of Cohesive Ties

Each major type of cohesive tie--reference, substitution-ellipsis, conjunction, and lexical cohesion--was found in the oral and written samples at each of the three grade levels. Table 1 shows the mean percentage of these ties produced by students in both channels of communication. In both the oral and written channels, students relied mainly on reference, conjunction, and lexical cohesion; they used the combined category of substitution and ellipsis to a much lesser extent. At all grade levels, lexical cohesion occurred more frequently in the written narratives than in the oral; for narratives written in grades four and six, lexical cohesion accounted for over 50% of the total number of ties produced. In addition, students in grades four and six used a higher percentage of reference ties in their oral than in their written narratives while students in grade eight reversed this trend, using a higher percentage of reference ties in their written narratives. The percentage of conjunctive ties remained relatively stable throughout the three grades except for a sharp decline in their use

in the grade eight written samples.

Insert Table 1 about here

Using Halliday and Hasan's (1976) classification scheme at a more detailed level, the researcher was able to determine the range of subtypes used within each of the major categories of cohesive ties. It was found that students exploited the text-forming options in some categories more than others. As explained below, even when the entire set of subtypes within a particular category of ties was used, it was frequently realized by a narrow range of word choices.

Reference. The oral and written narratives contained examples of each of the three subtypes of reference ties--pronominal, demonstrative, and comparative. Pronominal and demonstrative reference occurred frequently in all the oral and written samples. Comparative reference, the third subtype, occurred less frequently than the other two. Most comparative reference ties were instances of "difference"; one item was considered different from another previously mentioned item as signaled by such words as other, another, and else.

Substitution-Ellipsis. The combined category of substitution and ellipsis accounted for a very small percentage of the total number of cohesive ties in either channel. Substitution occurred much less frequently than ellipsis. Of the three subtypes of substitution--nominal, verbal, and clausal--only verbal substitution was used. Examples of all three subtypes of ellipsis--nominal, verbal, and clausal--were found. Clausal ellipsis was the most frequently used subtype, often occurring in the form of an answer to a question or an expression of polarity.

Conjunction. Each of the five subtypes of conjunctive ties--additive, adversitive, causal, temporal, and continuative--were used by students in

all three grade levels. Although students used a variety of conjunctive tie subtypes, in most cases they relied heavily on one word form as a means of making each of these relations explicit. For example, the additive relation was almost entirely realized through the word and; the adversative relation, through the word but; and the causal relation through the word so. The use of temporal relations was the only exception to this one-word strategy. Students used a variety of time-related ties, perhaps due to the importance of temporal sequence within narrative discourse. In general, however, students did not exploit the many text-forming possibilities based on conjunctive relations.

Lexical Cohesion. Four subtypes of lexical cohesion are forms of reiteration. They consist of (1) the use of repetition, (2) a synonym or near synonym, (3) a superordinate, (4) or a general word. The fifth subtype, collocation, includes words that tend to occur together and that share some type of semantic relationship. Examples of these subtypes occurred in both oral and written narratives. In each channel, however, students used repetition, synonyms or near synonyms, and collocation more frequently than the other two types of ties.

Density of Cohesive Ties

Two measures of density were computed. The first, a cohesive density score (Witte, 1980), consists of the number of words per text divided by the number of cohesive ties per text. The resulting score indicates the average number of words separating each tie. The second measure, the average number of ties per communication unit, gives a more specific indication of the density between identifiable syntactic units.

Table 2 shows the average density of cohesive ties within the student narratives produced at the three grade levels. Cohesive density scores ranged from 3.04 (the grade 4 oral sample) to 4.48 (the grade eight written

sample). Scores were lower for oral narratives than written, indicating that fewer words separated each instance of a tie. The average number of ties per communication unit likewise indicated a greater density of ties within the oral samples.

Insert Table 2 about here

Distance Between Cohesive Ties

Table 3 shows the mean percentage of each type of distance relation within the narratives. At each grade level, immediate ties accounted for the highest percentage of distance-related measures. Of the three non-immediate tie types, remote ties were used most frequently. Students at each grade level used a higher percentage of remote ties in their written narratives than in their oral. Mediated ties were used by students at all grade levels, but a higher percentage was used in the students' oral narratives. Mediated-remote ties accounted for a small portion of the total number of ties. They were used more often by eighth graders than fourth or sixth graders. It is tempting to speculate that the steady increase by grade level in the mean percent of these ties indicates a growing ability for sustained, elaborated discourse--a movement towards more mediated ties.

Insert Table 3 about here

Dominant Patterns of Cohesion

Portions of three texts were selected for mapping because of their overall distributions of cohesive ties. The first selection contains a high proportion of reference ties; the second, a high proportion of lexical ties; the third, the use of various subtypes of conjunctive ties.

For each selected portion, a part of the previous coding for cohesive

ties was illustrated using a technique adapted from Gutwinski (1976). This "mapping" technique shows the general pattern of cohesive ties within an extended portion of text.

The following mapping symbols were used:

x—x immediate anaphoric tie

x...x remote anaphoric tie

x---x mediated anaphoric tie

x.-.x mediated-remote anaphoric tie

— cataphoric tie

<u>=====</u> presupposed item is the same for different anaphorically or cataphorically related items

( ) presupposed item

A High Percentage of Reference Ties. The selection below consists of the first ten communication units of an oral narrative. Sixty percent of the ties in the entire narrative were reference ties.

Text (Grade 8, Oral Sample)

(1) Dina Ellen and Jim went on a nature walk to find things for their project

(2) as they started along cautiously not wanting to overlook anything they saw Jim heard a faint noise

(3) and he pointed to a tree

(4) and there was a little bird fluttering about

(5) and he decided it would be best if they took it down and brought it back with them

(6) so he climbed the tree carefully took it down and handed it to Ellen

(7) and then they decided instead of doing a project on things they saw in nature to change it to all about birds and how they

tried to nurse the bird back to health

(8) and they brought it back with them

(9) and they placed it carefully

(10) and they went to the library and took out alot of books trying to figure out what they could do to help it

Table 4 shows the distribution of reference, conjunction, and selected lexical ties. The reference columns indicate an almost continuous chain of pronouns referring to the characters in the story. Gutwinski (1976) calls this type of chained pronominal reference the participant line which he claims is characteristic of English narrative texts. This chain is supported by a chain of mostly additive type conjunctive ties. There is, however, almost no variety of conjunctive options. Lexical cohesion is a weak source of cohesion, perhaps because the speaker has used few descriptive details which would probably have added a number of collocational items.

Insert Table 4 about here

A High Percentage of Lexical Ties. The selection below comes from a written text that depends heavily on lexical cohesion as a text-forming strategy.

Text (Grade 6, Written Sample)

(1) The day of the bike race was today.

(2) I was afraid everyone would hear my heart pounding as I heard the words "On your mark, get set, go!"

(3) I pedaled as fast as I could, pushing the gear lever higher and higher.

(4) Apparently, I was about in third place,

(5) but this was only the first mile

(6) and there were still 10 miles to go!

(7) As I rode on, I started remembering the day before when I was arguing with my father about the race.

(8) "But I am almost a professional!" I screamed to my dad.

(9) "You are not!" my dad exclaimed.

(10) "You're a 15 year old kid trying to compete in a pro-bicycle race!"

This narrative achieves its textuality mainly through what might be called an event line. Most ties are related to the bike race, the event discussed in the narrative. Table 5 shows that this phrase is both repeated and joined in an extended collocational chain. What is significant here is that the events, rather than the participants, form the semantic backbone of this narrative.

Insert Table 5 about here

Use of Several Subtypes of Conjunctive Ties. In the selection below, conjunctive ties express four different cohesive relations--the additive, adversative, causal, and temporal. The variety of ties appears to give more depth to the narrative than simply a conjunctive chain formed by and or so which would result in a listing or compiling of events.

Text (Grade 8, Written Sample)

C-Unit No.

(13) and it seemed as if it would never end.

(14) we decided to write to each other in August because we were all going away.

(15) Then Ellen suggested that we better be going because it was getting dark.

(16) So we all got back on our bicycles and started for home.

(17) As we were riding Dina's back tire had a flat,

(18) so we all got off our bicycles and walked with her to the

gas station.

(19) When we finally arrived there, we accepted the offer of a peculiar looking gentlemen who said he'd put air in the tire for us.

(20) We saw nothing wrong with what he was doing

(21) for we never had this experience before.

(22) It looked as if he was putting too much air into the tire

(23) but since I wasn't sure I didn't say anything.

The conjunctive ties in this selection form part of a larger semantic structure which is also based on lexical and reference ties. As can be seen in Table 6, there is a strong participant line achieved through the use of the pronoun we. Numerous lexical ties, too, refer to the bicycle, a part of the situational context of the story. The use of several conjunctive subtypes appears to lend support to cohesion achieved through the strong participant and contextual lines.

Insert Table 6 about here

The four narratives studies point to the existence of (1) a participant line based on referential cohesive ties, (2) an event line, including words related to the situational context, based on lexical ties, and (3) a narrative support line based on conjunctive ties. These three constructs correspond to the narrative elements of character, setting, and plot. It seems entirely logical that the structure of meaning within text follows what is considered to be the structure of the discourse mode. The relative emphasis given to these elements may vary, and therefore so will the proportion of cohesive elements used to construct meaning.

Effects Associated With Grade, Sex, and Channel

The results of the ANOVA for the percentage of reference ties within

narratives indicated a significant main effect for grade level ($F_{2,12} = 4.49$). The Newman-Keuls procedure indicated that the mean percentage of reference ties used by eighth graders ($\bar{X}$=41.65) differed significantly ($p<.05$) from the mean percentages of reference ties used by fourth graders ($\bar{X}$=28.78) and sixth graders ($\bar{X}$=28.67). No significant differences were found between the mean percentages of reference ties used by fourth and sixth graders. The effects of channel, sex, and replication nested within sex and grade were not statistically significant,nor were the interactions of these factors.

The ANOVA for the dependent variable percentage of substitution-ellipsis ties did not reveal any significant main effects or interaction effects. These ties occurred infrequently in all narrative samples, corroborating previous research (Garber, 1979) that such ties occur infrequently in children's language samples.

The ANOVA for the percentage of occurrence of conjunctive ties showed a significant interaction effect for sex and grade ($F_{2,6} = 6.49$). An analysis of the tetrad differences between levels of these two variables showed that the average effects of sex differences were not the same at the different grade levels. The differences were significant between grades six and eight. Other main effects and interactions related to the presence of conjucntive ties were found to be non-significant.

A significant difference in the percentage of lexical ties was associated with the main effects of channel ($F_{1,6} = 10.79$), sex ($F_{1,6} = 7.22$), and grade ($F_{2,6} = 8.27$). The mean number of lexical ties produced was higher in the written channel ($\bar{X}$=308.57) than in the oral channel ($\bar{X}$=224.46). Boys produced more lexical ties ($\bar{X}$=288.05) than girls ($\bar{X}$=244.98). A Newman-Keuls analysis of grade level differences showed that the mean percentage of lexical ties for grades six ($\bar{X}$=47.51) and eight ($\bar{X}$=39.00) differed significantly.

Discussion

The results of this study indicated that the students in grades four, six, and eight made use of all principal kinds of cohesive ties in their oral and written narratives. This finding confirms the results of previous research (Garber, 1979) that young students do employ major text-forming strategies. However, the question remains as to why certain subtypes within these categories were used and others were not.

Grade eight students used a higher proportion of reference ties in each channel than students in grades four or six. One can speculate that older students have learned to refer within text, not only to previously mentioned items, but also to extended portions within text, while younger students are more closely bound to the situational context. The ANOVA did show a significant grade level effect for the presence of reference ties, suggesting developmental differences.

Substitution and ellipsis both occurred infrequently. Substitution occurred even less frequently than ellipsis, perhaps because elliptical forms require no definite slot filling terms and are, therefore, easier to use.

Students made frequent use of lexical ties, particularly repetition, synonyms or near synonyms, and collocation. However, they rarely used general nouns or superordinates. It is conceivable that students older than those participating in this study would have developed more discrete categories and would have used an even broader range of lexical strategies.

The investigation of cohesive density provided additional evidence of developmental trends in text production. Witte (1980) has suggested that cohesive density is one measure which separates good and poor quality essays. The narratives in the present study with the highest number of ties per communication unit were produced by eighth graders, while the narratives with the lowest number of ties per communication unit were produced by fourth graders. It is possible that developing writers learn to "tighten" their

texts by developing more meaning related ties between communication units.

The types of textual distances between elements forming cohesive ties likewise shows some movement towards more mature discourse as well as continuing indications of immature text-forming strategies. The students who participated in this study made considerable use of immediate ties; frequent use of these ties has been associated with beginning writers (Garber, 1979; King and Rentel, 1979; Witte, 1980). These students made substantially less use of mediated ties, ties which indicate continuity and unity within discourse. Remote ties occurred more frequently than either mediated or mediated-remote ties.

There are conflicting views concerning the compositional value of remote ties within discourse. Witte (1980) claims that they indicate a lack of development as well as unnecessary redundancy of ideas, while Garger (1979) states that remote ties may signal well developed organization and unity. While the frequent use of remote ties might indicate that new information was not introduced as efficiently as possible, or that previously introduced material was not elaborated upon in successive communication units, it also indicates that semantic content was sustained through a span of text. Moreover, the steady increase at each grade level in the use of mediated-remote ties in oral and written narratives could mean that older students are learning to produce discourse that is more elaborated and more unified than that of younger students. In effect, this could be a movement towards more mediated ties.

It is not certain to what extent the texture of discourse is influenced by the macro-structure of the discourse mode and to what extent the texture is a product of individual style. The results of this study indicate the influence of both of these factors. Several patterns of textual cohesion were found within the student narratives. Gutwinski (1976)

has argued that patterns of cohesive ties are largely dependent on the writer's choice of stylistic options. The current findings support this claim.

The effect of discourse structure on text was also supported by this study. Even in the mapping of short sequences from three of the narratives, evidence was found for the existence of a participant line, an event line, and a narrative support line. These constructs, which correspond to the narrative elements of character, setting, and plot, give evidence of the students' knowledge of the structure of narrative discourse.

Results of the analyses of variance showed that grade level was generally a significant factor associated with the occurrence of cohesive ties in this sample. Grade level was a significant influence associated with the occurrence of reference and lexical ties, while the interaction of grade and sex was a significant influence associated with the occurrence of conjunctive ties.

This study is based on a specifically selected student sample. The results are not generalizable to the entire population of school children at these grade levels. However, it does seem that by analogy, students with similar characteristics--above average ability in language arts as judged by their teachers and above average grade level scores on standardized reading tests--would produce narrative texts similar to those described in this study.

Implications

This study has shown that students use a substantial range of visible text forming strategies which can be itemized and described. It is this process of recognizing semantic strategies, labeling them, and generalizing from a large sample of language used in different situations that has vast explanatory power for educational theory and research.

TABLE 1

Mean Percentage of Each Type of Cohesive Tie in Oral and Written Narratives Produced at Three Grade Levels

Grade	Type of Tie			
	Reference	Substitution-Ellipsis	Conjunction	Lexical
		Oral Channel		
4	35.58	4.89	20.39	39.14
6	35.87	.50	25.30	38.34
8	40.89	1.38	22.98	34.75
		Written Channel		
4	21.98	1.82	21.86	54.35
6	21.48	1.17	20.68	56.68
8	42.41	1.88	12.47	43.26

TABLE 2

Density of Cohesive Ties

Grade	Cohesive Density (No. Wds./No. Ties)	Average Number of Ties per Communication Unit
	Oral Channel	
4	3.04	2.77
6	3.13	2.35
8	3.50	3.35
	Written Channel	
4	4.31	2.05
6	4.20	2.16
8	4.48	2.65

TABLE 3

Distance Relations Between the Elements That Form Cohesive Ties:

Mean Percentage of Occurrence at Three Grade Levels

Grade	Immediate Ties	Remote Ties	Mediated Ties	Mediated-Remote Ties
		Oral Channel		
4	49.40	30.07	14.57	5.96
6	54.87	23.61	13.15	8.36
8	41.76	29.38	13.34	15.52
		Written Channel		
4	52.42	42.27	2.69	2.63
6	45.18	41.10	9.10	4.63
8	35.46	34.74	3.25	26.56

TABLE 4

Map of a Selection From a Narrative With a High Percentage of Reference Ties

C-Unit Number	REFERENCE: Pronominal 1	Pronominal 2	Pronominal 3	Demonstrative and Definite Article	CONJUNCTION: Additive and Causal	LEXICAL SETS 1	2	3	4
1	x (Dina, Ellen, and Jim)					x (project)			
2	x they (2x)	x (Jim)					x (cautiously)		
3		x he		x (tree)	x and			x (tree)	
4			x (bird)	x there	x and				x (bird)
5	x they, them	x he	x it (2x)		x and				
6		x he	x it (2x)	x the (tree)	x so		x carefully	x tree	
7	x they (3x)			x the (bird)	x and	x project			x bird, birds
8	x they, them		x it		x and				
9	x they		x it		x and		x carefully		
10	x they (2x)		x it		x and				

TABLE 5

Map of a Narrative With a High Percentage of Lexical Ties

C-Unit Number	LEXICAL COHESION: Same Item						Synonym or Near Synonym			Collocation
1	x (day)	x (bike race)								x (bike race)
2										x "On your mark, get set, go!"
3										x pedaled . . . fast
4										x third place
5			x (mile)							
6			x miles							
7	x day	x race					x (father)			
8				x (professional)	x (dad)		x dad	x (screamed)		
9					x dad			x exclaimed		
10		x bicycle race		x pro						x compete

TABLE 6

Map Showing the Use of Various Subtypes of Conjunctive Ties

C-Unit Number	CONJUNCTION				REFERENCE		LEXICAL SETS	
	Additive	Adversative	Causal	Temporal	Pronominal		1	2
	x				x (conversation)			
13	x and				x it			
14				x	x we			
15			x	x Then	x we		Ellen	
16			x so	x	x we, our			x bicycles
17			x	x As we were riding	x we		Dina	x tire
18			x so	x	x we, our, her			x bicycles
19				x When we finally arrived there;	x we, us	x (gentleman)		x air, tire
20			x		x we	x he		
21			x for		x we			
22		x				x he		x air, tire
23		x but						

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